MEDICINE TODAY

This department of California and Western Medicine presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to every member of the California, Nevada and Utah Medical Associations to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

Alleged Superiority of Normal Human Serum Over Convalescent Serum in Poliomyelitis.—Why pay $10 per 100 cc. for convalescent human blood, when a more potent, more dependable antipoliomyelitis serum can be prepared from normal human blood? Why rush convalescent serum by aeroplane to a distant patient, when better therapeutic results can be produced with the serum or whole blood of any adult member of the patient's family? Why be disappointed over failure of routine quarantine measures to control this disease, when the causative agent is omnipresent in the human environment, only an occasional immunological defective ever developing symptoms? These are some of the unorthodox possibilities suggested by the recent experimental work of three Chicago physicians,[1] who, for the first time, have applied accurate quantitative methods to the serologic study of this disease. Of course, no final conclusion can be drawn from their data, till their alleged evidence is confirmed by other investigators, with other virus strains and in other environments. Their results, nevertheless, suggest a new immunological logic in infantile paralysis and offer new hope of its ultimate medical control.

Dr. Shaughnessy and his collaborators were struck by the conflicting clinical reports with convalescent poliomyelitis sera, by Dr. Zingher's alleged therapeutic success with an occasional normal human serum,[2] and by the total lack of quantitative serological study with adequate controls. In confirmation of the work of others, they found that full strength convalescent serum from poliomyelitis cases often, though not invariably, kills, inactivates or neutralizes poliomyelitis virus when mixed with it in equal proportions in the test tube. But contrary to previous expectations they found that but 40 per cent of these sera were of sufficient strength to show any demonstrable viricidal action in dilutions as high as 1:30, corresponding roughly to the maximum practicable therapeutic dose in human medicine.

With the sera of normal adults, however, they obtained very much better results, 80 per cent of them neutralizing the same virus in 1:30 dilutions. Of course, they did not make the mistake of assuming that this test tube titer is an accurate measure of therapeutic value, but from their experimental evidence they did feel justified in recommending that "clinicians study the value of normal sera, known to neutralize virus (in vitro), in the therapeusis of poliomyelitis."

Of equal interest is their observation that none of their sera of normal infants under two years of age showed any viricidal action whatsoever in dilutions higher than 1:2 while 90 per cent of the sera of insusceptible family contacts and of unexposed children over two years of age neutralized this virus in dilutions as high as 1:30. Apparently there is, in the environments studied by them, some omnipresent specific or relatively specific factor causing mass immunization of children before the beginning of the third year. Similar, though less rapid, mass immunizations are, of course, well known in diphtheria and scarlet fever.

Their work further suggests that the children who develop poliomyelitis are to a large extent immunologically defective, since but 30 per cent of them are able to develop permanent high titer viricidal antibodies. Among the insusceptible contacts and apparently unexposed normal children 90 per cent develop this high-titer humoral defense. Of course, this conclusion is invalid if it can be shown that the humoral viricide is not the sole or essential factor in antipoliomyelitis immunity.

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1 Shaughnessy, H. J.; Harmon, P. H., and Gordon, F. B. Neutralization of the Virus of Poliomyelitis by Human Sera. Proc. Soc. Exper. Biol. and Med. 27, 742. May, 1930.

2 Zingher, A. J. A. M. A., 68, 817. 1917.

The Excretion of Analgesics and Hypnotics. Although combinations of hypnotics and analgesics in fixed proportions of the type of "Allonal" have been condemned on general grounds by the Council on Pharmacy and Chemistry[1] of the American Medical Association as being marketed with unwarranted therapeutic claims and with lack of scientific background, further substantial condemnation of such mixtures has recently been offered by Koppanyi and Lieberson.[2] Such mixtures were introduced originally on the basis that the constituents act synergistically, but this has been denied. It has further been claimed that the toxicity of the hypnotic component (usually a barbital derivative) is antagonized by the analgesic (usually amidopyrin) and vice versa. There is no evidence, however, that this antagonism of toxicity exists in reality.

Koppanyi and Lieberson, in studying the rates of excretion and the duration of action of amidopyrin and barbital, find that whereas about 300 per cent of the average fatal intravenous dose of amidopyrin is excreted in twenty-four hours on repeated administration of small doses, only about five per cent of the average fatal intravenous dose of sodium barbital is similarly excreted. They point out that the difference in the

1 Report, Council on Pharmacy and Chemistry, J. A. M. A., 86, 1853, 1926.

2 Koppanyi, T., and Lieberson, A. Jour. Pharmacol. and Exper. Therap., 39, 177, June 1930.